



# Applied

## Grade 9 Assessment of Mathematics

### Multiple-Choice Items

Winter 2005



Education  
Quality and  
Accountability  
Office

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The items themselves  
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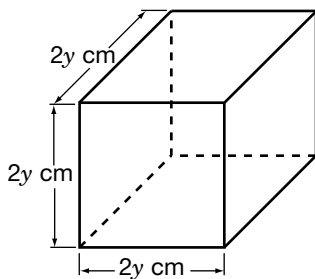


1. What is the sale price of the skateboard?



- a \$40.00
- b \$64.00
- c \$120.00
- d \$135.00

2. Each side of a cube is  $2y$  cm long. What is the volume of the cube?



- a  $8y^3 \text{ cm}^3$
- b  $6y \text{ cm}^3$
- c  $2y^3 \text{ cm}^3$
- d  $2y \text{ cm}^3$

3. Kaya works as a translator. She charges  $21¢$  for each word she translates.



Which expression should Kaya use to calculate her charge, in dollars, for translating a document with  $n$  words?

- a  $\$ \frac{21 \times n}{100}$
- b  $\$ \frac{100}{21 \times n}$
- c  $\$ \frac{n}{21 \times 100}$
- d  $\$ \frac{21 \times 100}{n}$

4. Mark records his car's odometer reading. He travels at approximately the same speed for the whole journey and makes only one 30-min rest stop.

Time	Reading (km)
12:00 noon	25 091
1:00 p.m.	25 178
2:00 p.m.	25 222
3:00 p.m.	25 310
4:00 p.m.	25 395
5:00 p.m.	25 483



When does Mark most likely make his 30-min rest stop?

- a Between 1:00 p.m. and 2:00 p.m.
- b Between 2:00 p.m. and 3:00 p.m.
- c Between 3:00 p.m. and 4:00 p.m.
- d Between 4:00 p.m. and 5:00 p.m.

5. What is the cost of a portable CD player, including 15% tax?



- a \$71.65
  - b \$67.85
  - c \$62.30
  - d \$30.71
6. The advertisement below shows the sale price of a big-digit calculator.

Sale Price

**\$7.99**

Save 50%

**Big-digit calculator**

What is the best estimate of the **regular price** of the big-digit calculator?

- a \$12
- b \$14
- c \$16
- d \$18

7. A 4 L can of paint covers an area of  $36 \text{ m}^2$ .



What area will a 10 L can of paint cover?

- a  $40 \text{ m}^2$   
b  $60 \text{ m}^2$   
c  $90 \text{ m}^2$   
d  $360 \text{ m}^2$
8. Express the number 0.000 000 078 in scientific notation.  
a  $7.8 \times 10^{-8}$   
b  $7.8 \times 10^{-9}$   
c  $7.8 \times 10^8$   
d  $7.8 \times 10^9$
9. A ball is hit straight up into the air. The height of the ball,  $h$ , in metres, after  $t$  seconds is given by the following formula:

$$h = 5(6t - t^2).$$

What is the height of the ball after 3 s?

- a 45 m  
b 51 m  
c 75 m  
d 81 m

10. A steel bar will expand when it is heated and contract when it is cooled. The relationship between the length of the bar,  $L$ , (mm) and the temperature,  $T$ , ( $^{\circ}\text{C}$ ) is given by

$$L = 5000 + 0.12(T - 20).$$

What is the length of the steel bar when the temperature is  $45 \text{ }^{\circ}\text{C}$ ?

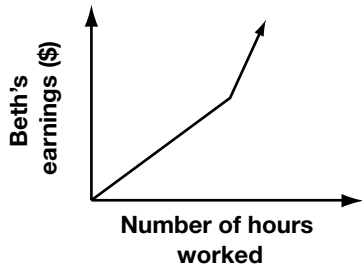
- a 5001 mm  
b 5002 mm  
c 5003 mm  
d 5004 mm
11. If  $a = 2$  and  $b = 3$ , which expression below has the **largest** value?  
a  $ab^2$   
b  $a^2b$   
c  $a^2 + b^2$   
d  $a^2 - b^2$

12. Beth works at a grocery store. She earns \$8/h for her first 20 h of work in a week. She earns \$11/h for working beyond 20 h a week.

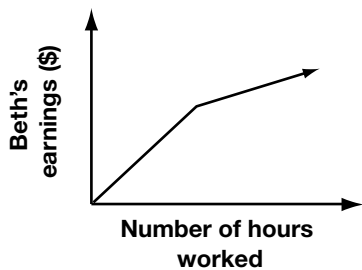


Which graph shows the relationship between Beth's earnings and the number of hours she works in a week?

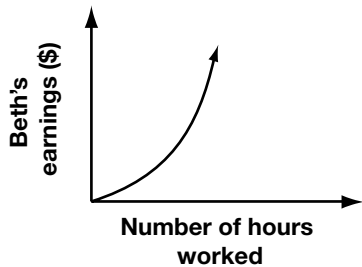
a



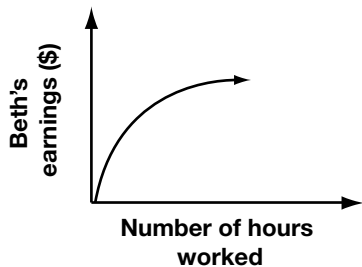
b



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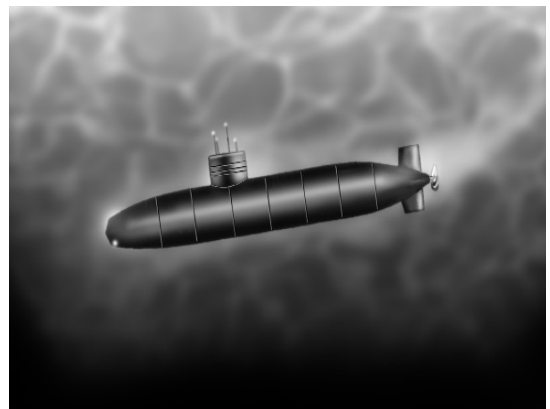
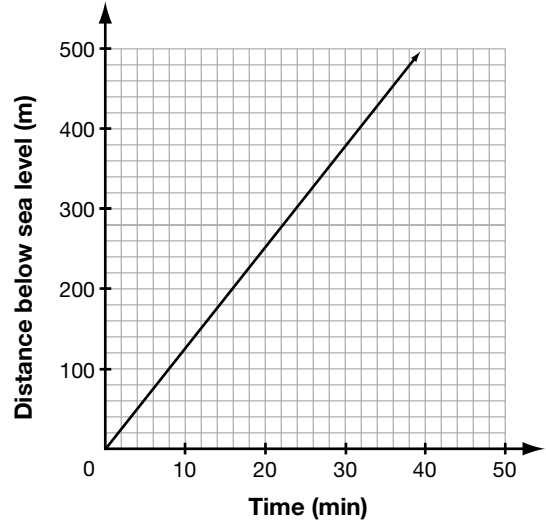


d



13. A submarine is submerging. The graph shows the distance below sea level the submarine has descended over time.

Distance Below Sea Level vs. Time



How far below sea level has the submarine descended after 24 min?

- a 300 m
- b 325 m
- c 350 m
- d 375 m

14. A moving company charges a flat fee of \$24, plus a rate of \$6/h.



For how many hours did you use the moving company if your bill is \$120?

- a 5 h
- b 12 h
- c 16 h
- d 20 h

15. Sergio sells 7 models of CD players. The table shows the unit cost of each model and the number of CD players of that model sold in the past month.

Model	Unit cost (\$)	Number sold
A	55	11
B	70	14
C	90	17
D	100	21
E	120	24
F	150	29
G	200	41

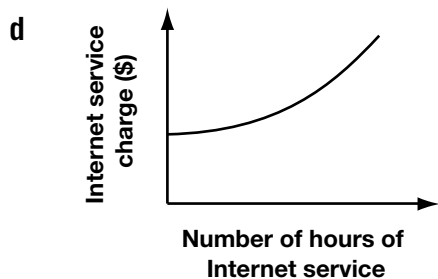
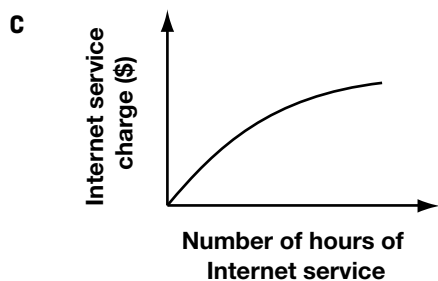
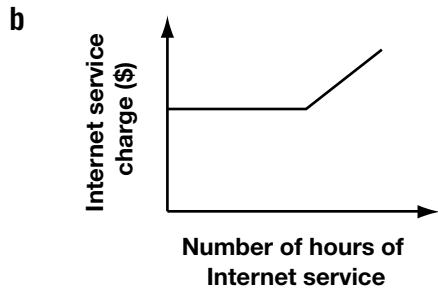
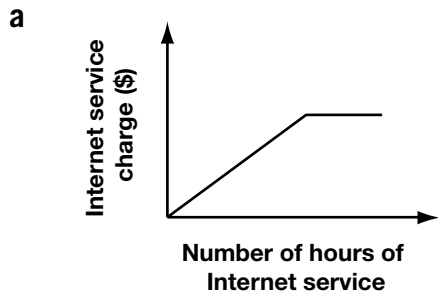


Which statement about the relationship between the unit cost and the number of CD players sold is **true**?

- a There is no relationship between the unit cost and the number sold.
- b As the unit cost increases, the number sold decreases.
- c As the unit cost increases, the number sold is constant.
- d As the unit cost increases, the number sold increases.

16. An Internet service provider charges \$18.00 for the first 10 h each month plus \$2.00 for each additional hour of service.

Which graph shows the relationship between total charges in a month and the number of hours of Internet service?



17. Natasha works for a computer company. The table shows her annual salary in the last five years.

Year	Annual salary (\$)
1	32 000
2	33 600
3	35 200
4	36 800
5	38 400

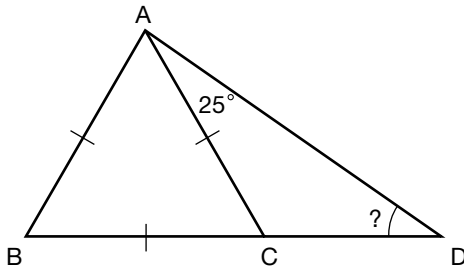


If the trend continues, what will Natasha's annual salary be in the 8th year?

- a \$40 000
- b \$43 200
- c \$46 400
- d \$49 600



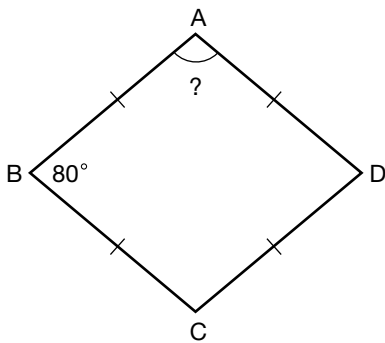
18. ABC is an equilateral triangle. BC is extended to D so that  $\angle CAD = 25^\circ$ .



What is the measure of  $\angle ADC$ ?

- a  $25^\circ$
- b  $35^\circ$
- c  $45^\circ$
- d  $55^\circ$

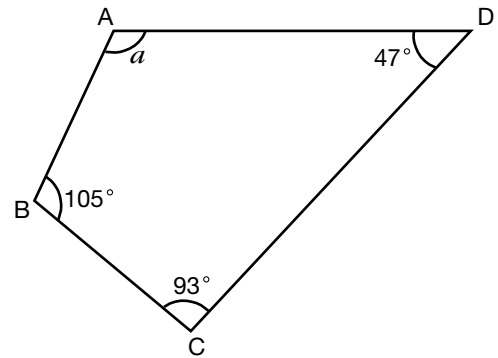
19. ABCD is a quadrilateral with all sides the same length.  $\angle B = 80^\circ$ .



What is the measure of  $\angle A$ ?

- a  $80^\circ$
- b  $90^\circ$
- c  $100^\circ$
- d  $110^\circ$

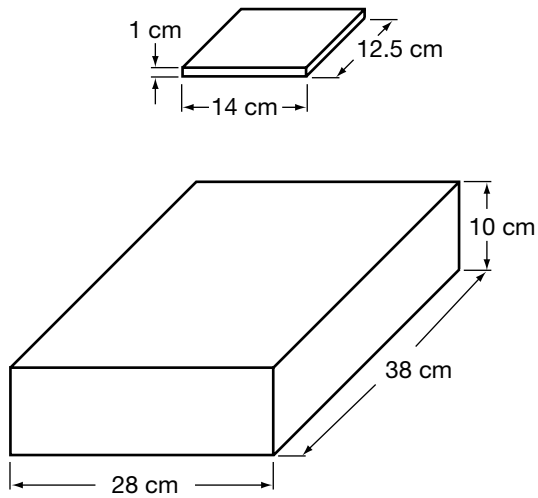
20. ABCD is a quadrilateral.



What is the value of  $a$ ?

- a  $105^\circ$
- b  $115^\circ$
- c  $120^\circ$
- d  $125^\circ$

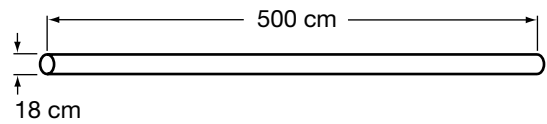
21. Elisa wants to pack CD cases into a storage box.



What is the largest number of CD cases Elisa can pack inside the **covered** storage box?

- a about 40
- b about 50
- c about 60
- d about 70

22. A metal air duct is made in the shape of a cylinder and is open at both ends.

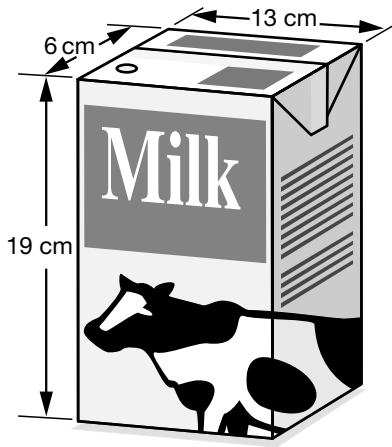


The air duct is made from a sheet of metal.

Which expression shows the area of the curved surface of the air duct?

- a  $2\pi \times 9 \times 500 \text{ cm}^2$
- b  $2\pi \times 18 \times 500 \text{ cm}^2$
- c  $\pi \times 92 \times 500 \text{ cm}^2$
- d  $\pi \times 182 \times 500 \text{ cm}^2$

23. A carton of milk measures  $6\text{ cm} \times 13\text{ cm} \times 19\text{ cm}$ .

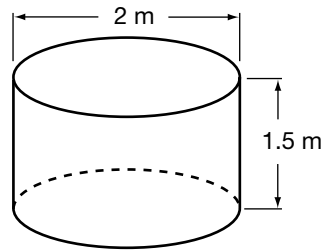


**Hint:**  
 $1000\text{ cm}^3 = 1\text{ L}$

About how much milk can the carton hold when filled to the top?

- a 1 L
- b 1.5 L
- c 2 L
- d 2.5 L

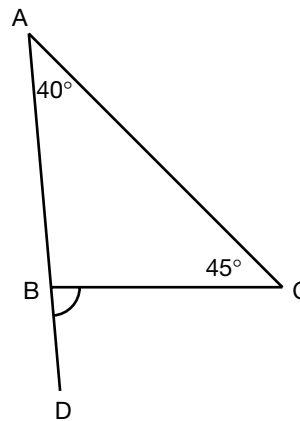
24. Mei has a cylindrical hot tub with dimensions as shown.



What volume of water can Mei's tub hold when filled to the top?

- a  $4.7\text{ m}^3$
- b  $6.0\text{ m}^3$
- c  $9.4\text{ m}^3$
- d  $18.8\text{ m}^3$

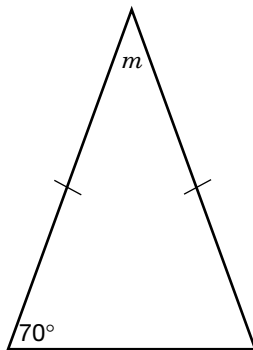
25. ABC is a triangle. AB is extended to D.



What type of angle is  $\angle CBD$ ?

- a straight angle
- b obtuse angle
- c acute angle
- d reflex angle

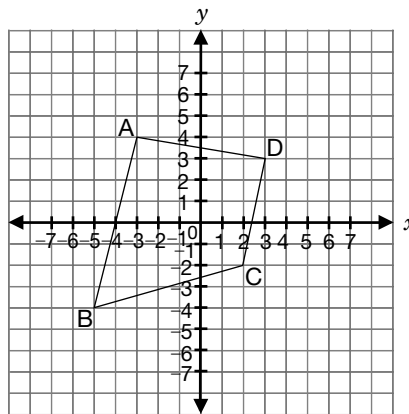
26. The figure below shows an isosceles triangle.



What is the value of  $m$ ?

- a  $40^\circ$
- b  $50^\circ$
- c  $60^\circ$
- d  $70^\circ$

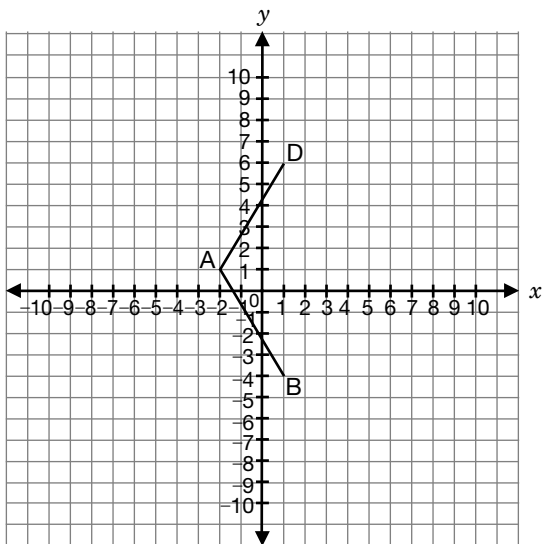
27. Four points, A, B, C and D, are marked on an  $xy$ -plane and joined by line segments as shown.



Which line segment has a **negative** slope?

- a BA
  - b BC
  - c CD
  - d AD
28. Which of the following lines has the **same** slope as the line  $y = 2x + 1$ ?
- a  $y = -x + 1$
  - b  $y = -x + 2$
  - c  $y = -2x - 1$
  - d  $y = 2x - 2$

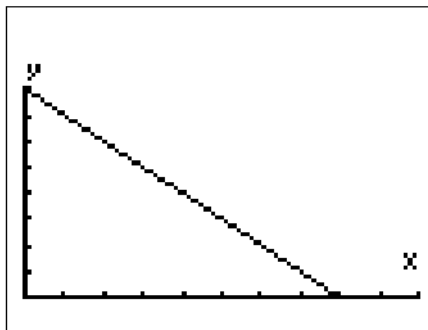
29. A is the point  $(-2, 1)$ , B is the point  $(1, -4)$  and D is the point  $(1, 6)$ .



If ABCD is a rhombus, which of the following points is point C?

- a  $(1, 1)$
- b  $(1, 4)$
- c  $(4, 1)$
- d  $(4, 4)$

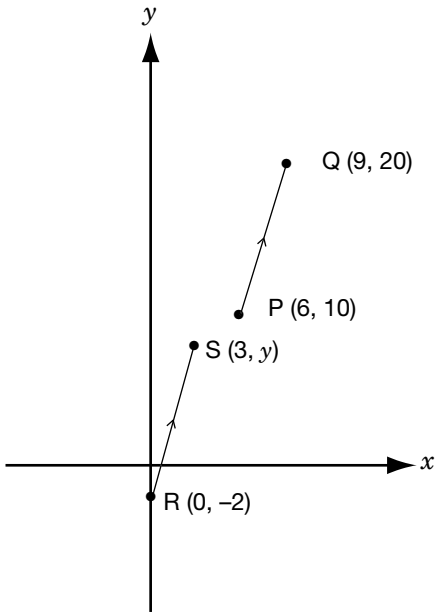
30. Study the display on Marie's graphing calculator.



Which statement describes the relation between  $x$  and  $y$ ?

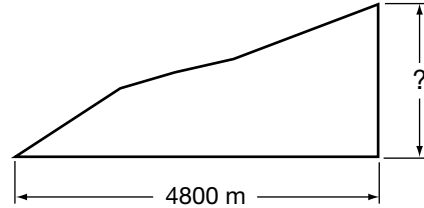
- a  $y$  increases linearly as  $x$  increases.
- b  $y$  decreases linearly as  $x$  increases.
- c  $y$  increases non-linearly as  $x$  increases.
- d  $y$  decreases non-linearly as  $x$  increases.

- 31.** PQ and RS are parallel line segments.  
What is the value of  $y$ ?



- a** 5
- b** 6
- c** 7
- d** 8

- 32.** For an easy ski run, a ski hill must have an average slope that is about  $\frac{1}{8}$ . A new ski slope is to be constructed that will cover a horizontal distance of 4800 m.



What is the vertical drop that the hill must have in order to be an easy ski run?

- a** about 600 m
- b** about 620 m
- c** about 4400 m
- d** about 4464 m





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